2023 International Conference on Intelligent Communication and Computer Engineering (ICICCE 2023)

Changsha, China
24 – 26 November 2023

IEEE Catalog Number: CFP23UU1-POD
ISBN: 979-8-3503-9562-4

Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP23UU1-POD
ISBN (Print-On-Demand): 979-8-3503-9562-4
ISBN (Online): 979-8-3503-9561-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

2023 International Conference on Intelligent Communication and Computer Engineering (ICICCE)

ICICCE 2023

Table of Contents

Preface ..... **viii**
Organizing Committee ..... **ix**

2023 International Conference on Intelligent Communication and Computer Engineering

Development of Digital Twin Plat-form for UHV Converter Transformer Bushing Based on Material Simulation and Optical Detection 1
Shiling Zhang (State Grid Chongqing Electric Power Company)

Privacy-Preserving, Low-Storage, and High-Quality Image Processing in IoT and Clouds 9
Shushan Zhao (Central Connecticut State University, USA) and Wes Chiang (Brock University, Canada)

Application and Practice of Digital Twin Technology in Monitoring Status of Power Equipment in Converter Valve Hall 14
Yongsheng He (State Grid Chongqing Electric Power Company Electric Power Research Institute), Baojia Deng (State Grid Chongqing Electric Power Company Electric Power Research Institute), Zongxiang Lu (Tsinghua University), Shiling Zhang (State Grid Chongqing Electric Power Company Electric Power Research Institute), and Liangjun Dai (State Grid Chongqing Electric Power Company Electric Power Research Institute)

Network Intrusion Detection Based on Feature Selection and Transformer 23
Ke Di (Beihang University, China)

High Security Frequency Hopping Communication for the Power Internet of Things 29
X. Liu (China Three Gorges University, China), M. Zeng (China Three Gorges University, China), H. Deng (State Grid Yichang Electric Power Supply Company, China), S. Peng (State Grid Yichang Electric Power Supply Company, China), and C. Liu (State Grid Yichang Electric Power Supply Company, China)

Resource Optimization-Oriented Method for Generating Cooperative Interference Strategies 37
Yue Zeng (University of Electronic Science and Technology of China, China), Qiao Liu (University of Electronic Science and Technology of China, China), Tingting Dai (University of Electronic Science and Technology of China, China), Yanwen Huang (University of Electronic Science and Technology of China, China), Rui Hou (University of Electronic Science and Technology of China, China), Yanglei Gan (University of Electronic Science and Technology of China, China), and Junjie Lang (The 54th Research Institute of China Electronics Technology Group Corporation, China)

Application and Practice of Wireless LAN Security Enhancement Technology Based on WAPI .. 47
Jiadong Huang (China Southern Power Grid Energy Storage Co. LTD), Cheng Ma (China Southern Power Grid Energy Storage Co. LTD), Yi Li (China Southern Power Grid Energy Storage Co. LTD), Yong Luo (China Southern Power Grid Energy Storage Co. LTD), and Yijie Su (China Southern Power Grid Energy Storage Co. LTD)

Application Research of Power Plant Intelligent Patrol System Based on Internet of Things Technology 52
Jiadong Huang (Southern Power Grid Energy Storage Co., Ltd), Baoqiang Zhong (Southern Power Grid Energy Storage Co., Ltd), Pengchao Yue (Southern Power Grid Energy Storage Co., Ltd), and Yikai Tan (Southern Power Grid Energy Storage Co., Ltd)

Research and Exploration of the Data Security Compliance Inspection Technology Based on the Large-Scale Call Platform of the Customer Service Center 57
Longzhu Zhu (State Grid Customer Service Center), Kunpeng Liu (State Grid Customer Service Center), Jingchang Hao (State Grid Customer Service Center), Chenfei Wang (State Grid Customer Service Center), Lihua Gong (State Grid Customer Service Center), and Wei Xing (State Grid Customer Service Center)

Temporal-Aware Hybrid Energy Optimization: Surface Loss and Differentiable SDF in SLAM .. 62
Kai Qin (Aerosapce Information Reasearch Institute, Chinese Academy of Sciences, School of Electronic, Electrical and Communication Engineering, University of Chinese Academy of Sciences), Yuchen Li (Aerosapce Information Reasearch Institute, Chinese Academy of Sciences), Weiyi Chen (Aerosapce Information Reasearch Institute, Chinese Academy of Sciences), and Haitao Wu (Aerosapce Information Reasearch Institute, Chinese Academy of Sciences)

A Product Classification Recognition Model Based on Correlation Analysis and a Combination of Multiple Machine Learning Classification Algorithms 72
Qiongzu Feng (Dongguan University of Technology, China), Xinran Huang (Chengdu Neusoft University, China), and Tonghui Qu (Hangzhou Hikvision Digital Technology, China)

Comparison and Analysis of the Effect of XGBoost Classification, bp Neural Network Classification and CatBoost Classification on Malware Attack Prediction 77
Shuo Wang (Shenyang AerospaceUniversity, China)

Prompt-Enhanced Federated Learning for Aspect-Based Sentiment Analysis 81
Khwaja Mutahir Ahmad (University of Electronic Science and Technology of China, P.R.China), Qiao Liu (University of Electronic Science and Technology of China, P.R.China), Abdullah Aman Khan (University of Electronic Science and Technology of China, P.R.China), Yanglei Gan (University of Electronic Science and Technology of China, P.R.China), and Changhao Huang (China Telecom Corporation Limited, P.R.China)

Research on the Mathematical Prediction Theory Model of User Side Light Storage Energy Generation and Its Validation Analysis 88
Shiling Zhang (State Grid Chongqing Electric Power Company), Fan Ye (State Grid Chongqing Electric Power Company), Qiang Xiao (State Grid Chongqing Electric Power Company), Jungang Wu (State Grid Chongqing Electric Power Company), Zihan Meng (State Grid Energy Research Institute Co., Ltd), and Jing Hu (State Grid Energy Research Institute Co., Ltd)

Design of Intelligent Drug Delivery Vehicle Based on YOLOv5 for Digital Recognition and Automatic Tracking 94
Zhoulin Chang (Guangdong University of Science and Technology, China), Wensheng Gu (Guangdong University of Science and Technology, China), Hanrui Cai (Guangdong University of Science and Technology, China), and Yulin Lao (Guangdong University of Science and Technology, China)

A LSTM-Based Power Generation Forecasting Method For The Gird With Multiple Power Generation Modes 98
Honghao Huo (Beijing Jiaotong University, China), Qiong Wang (The State Grid Beijing Electric Power Company, China), and Yu Zhang (State Grid Energy Research Institute Co., Ltd., China)

Application Research and Progress of BP Neural Network Prediction Model Optimized by Genetic Algorithm 105
Duanlian Wang (School of Computer Science and Engineering Wuhan Institute Technology, China), Wei Huang (School of Computer Science and Engineering Wuhan Institute Technology, China), Qi Xiong (School of Computer Science and Engineering Wuhan Institute Technology, China), and Zhiyuan Wen (School of Computer Science and Engineering Wuhan Institute Technology, China)

Learning Semantic Structure Correlation with Deep Semantic Alignment Network for Cross-Modal Retrieval 110
B. Lu (Dalian Minzu University, China), Y. Y. Chen (Dalian Minzu University, China), Z. C. Shi (Dalian Minzu University, China), T. Yang (Dalian Minzu University, China), H. X. Cai (Dalian Minzu University, China), H. L. Lu (Dalian Minzu University, China), Y. Yuan (Beijing Institute of Technology, China), and X. D. Duan (Dalian Minzu University, China)

Comparative Study of Machine Learning Methods for Nonlinearity Prediction in Nanopositioning 115
Yixuan Meng (Shanghai Jiao Tong University, China), Xiangyuan Wang (Shanghai Jiao Tong University, China), Lingwen Tan (Shanghai Jiao Tong University, China), and LiMin Zhu (Shanghai Jiao Tong University, China)

Kinematic Analysis of Tractor-Trailer Mobile Robot on a Sphere 121
K. Chen (Inner Mongolia University of Technology), W. Z. Zhang (Inner Mongolia University of Technology), and J. Deng (Inner Mongolia University of Technology)

A Robot Navigation Method Based on Hippocampus Place Cell Cognitive Map and Successor Representation 129
Zhang Ziheng (Beijing University of Technology, China) and Xiaogang Ruan (Beijing University of Technology, China)

Privacy Armor for IoT: A Fusion Framework of Blockchain and LSTM for Data Security 134
Jun Hu (China Mobile Group Guangdong Co., Ltd., China), Gang Du (China Mobile Group Design Institute Co., Ltd., China), Qian Wang (China Mobile Group Guangdong Co., Ltd., China), and Xin Jin (China Mobile Group Design Institute Co., Ltd., China)

Automatic Identification of Ship-Ice Impact Based on SDD Model 140
Qun Ma (Jiangsu University of Science and Technology, China), Fang Li (Shanghai Jiao Tong University, China), Shifeng Ding (Jiangsu University of Science and Technology, China), Li Zhou (Shanghai Jiao Tong University, China), and Sen Han (Jiangsu University of Science and Technology, China)

Fixed Pattern Noise Removal Based on Wavelet Transform and Semi-Calibration 144
Binbin Li (Beijing Institute of Technology, China) and Yufeng Chen (Beijing Institute of Technology, China)

A Method of Viewshed Analysis Based on Azimuth Information Processing 153
Cui-Xia Wu (PLA Army Academy of Artillery and Air Defense, China), Qiang Gao (PLA Army Academy of Artillery and Air Defense, China), Pei-Feng Zhang (PLA Army Academy of Artillery and Air Defense, China), Peng Li (PLA Army Academy of Artillery and Air Defense, China), and Er-Wei Zhang (PLA Army Academy of Artillery and Air Defense, China)

Code Clone Detection Based on Code Semantic Enhancement Model 159
Chunyan Zhang (State Key of Laboratory of Mathematical Engineering and Advanced Computing, China), Ziang Shen (Beijing University of Civil Engineering and Architecture, China), and Chen Liang (State Key of Laboratory of Mathematical Engineering and Advanced Computing, China)

A Study of Climbing Strategy on Unitree Aliengo 163
Wang Jiong (Robotics Engineering Center, The 21st Research Institute of China Electronics Technology Group Corporation, China), Wang Rui (Qiyuan lab, China), Xi Ao (Robotics Engineering Center, The 21st Research Institute of China Electronics Technology Group Corporation, China), and Zhu Huishen (Robotics Engineering Center, The 21st Research Institute of China Electronics Technology Group Corporation, China)

Author Index **169**